Strand IV: Number Sense and Numeration

Standard 1: Concepts and Properties of Numbers - Students experience counting and measuring activities to develop intuitive sense about numbers, develop understanding about properties of numbers, understand the need for the existence of different sets of numbers, and investigate properties of special numbers.

Key Ideas

1. An intuitive quantitative sense develops from students' investigations of numbers and their properties.
2. A solid understanding of the numeration system is essential for later success with calculations.
3. Important properties provide students with deeper insight into numbers and their uses.
4. Numeration systems become most useful as students use them to model and describe problems.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Develop an understanding of whole numbers and read, write and count using whole numbers; investigate basic concepts of fractions and decimals.	**Count, write, and order numbers** **N.ME.00.01** Count whole numbers and recognize how many objects are in sets to 30. **N.ME.00.02** Use one-to-one correspondence to compare and order sets of objects to 30 using such phrases as "same number", "more than", or "less than"; use counting and matching. **N.ME.00.03** Compare and order numbers to 30 using phrases such as "more than" or "less than." **N.ME.00.04** Read and write numerals to 30 and connect them to the quantities they represent.	**Count, write, and order numbers** **N.ME.01.01** Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100's and 10's; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd. **N.ME.01.02** Read and write numbers to 110 and relate them to the quantities they represent. **N.ME.01.03** Order numbers to 110; compare using the phrases: same as, more than, greater than, fewer than; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21,16, 35, 8. **N.ME.01.04** Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100. **N.ME.01.05** Understand that a number to the right of another number on the number line is bigger and that a number to the left is smaller. **N.ME.01.06** Count backward by 1's starting from any number between 1 and 100. **Explore place value** **N.ME.01.07** Compose and decompose numbers to 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.	**Count, write, and order whole numbers** **N.ME.02.01** Count to 1000 by 1's, 10's, and 100's starting from any number in the sequence. **N.ME.02.02** Read and write numbers to 1000 in numerals and words, and relate them to the quantities they represent. **N.ME.02.03** Compare and order numbers to 1000; use the symbols > and <. **N.ME.02.04** Count orally by 3's and 4's starting with 0, and by 2's, 5's, and 10's starting from any number. **Understand place value** **N.ME.02.05** Express numbers up to 1000 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials. **Work with unit fractions** **N.ME.02.18** Recognize, name, and represent commonly used unit fractions with denominators 12 or less; model $\frac{1}{2}, \frac{1}{3}$, and $\frac{1}{4}$ by folding strips. **N.ME.02.19** Recognize, name, and write commonly used fractions: $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$. **N.ME.02.20** Place 0 and halves, e.g., $\frac{1}{2}, 1\frac{1}{2}, 2\frac{1}{2}$, on the number line; relate to a ruler. **N.ME.02.21** For unit fractions from 1/12 to 1/2, understand the inverse relationship between the size of a unit fraction and the size of the denominator; compare unit fractions from 1/12 to 1/2. **N.ME.02.22** Recognize that fractions such as $\frac{2}{2}, \frac{3}{3}$ and $\frac{4}{4}$ are equal to the whole (one).	**Understand and use number notation and place value** **N.ME.03.01** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects. **N.ME.03.02** Recognize and use expanded notation for numbers using place value to 10,000s place, e.g., 2,517 is 2 thousands, 5 hundreds, 1 ten, and 7 ones; 4 hundreds and 2 ones is 402; identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. **N.ME.03.03** Compare and order numbers up to 10,000. **Count in steps, and understand even and odd numbers** **N.ME.03.04** Count orally by 6's, 7's, 8's, and 9's starting with 0, making the connection between repeated addition and multiplication. **Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.16** Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator." **N.ME.03.17** Recognize, name and use equivalent fractions with denominators 2, 4, and 8, using strips as area models. **N.ME.03.18** Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8.	**Understand and use number notation and place value** **N.ME.04.01** Read and write numbers to 1,000,000; relate them to the quantities they represent; compare and order. **N.ME.04.02** Compose and decompose numbers using place value to 1,000,000's, e.g., 25,068 is 2 ten thousands, 5 thousands, 0 hundreds, 6 tens, and 8 ones. **N.ME.04.03** Understand the magnitude of numbers up to 1,000,000; recognize the place value's of numbers, and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds. **Read, interpret and compare decimal fractions** **N.ME.04.15** Read and interpret decimals up to two decimal places; relate to money and place value decomposition. **N.ME.04.16** Know that terminating decimals represent fractions whose denominators are 10, 10 x 10, 10 x 10 x 10, etc. e.g., powers of 10. **N.ME.04.17** Locate tenths and hundredths on a number line. **N.ME.04.18** Read, write, interpret, and compare decimals up to two decimal places. **N.ME.04.20** Understand fractions as parts of a set of objects.

2. Investigate and develop an understanding of the base-10 place-value system.	**Compose and decompose numbers** **N.ME.00.06** Understand the numbers 1 to 30 as having one, or two, or three groups of ten and some ones. Also count by tens with objects in ten-groups, to 100.	**Count, write, and order numbers** **N.ME.01.01** Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100's and 10's; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd. **N.ME.01.02** Read and write numbers to 110 and relate them to the quantities they represent. **N.ME.01.04** Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100. **N.ME.01.06** Count backward by 1's starting from any number between 1 and 100. **Explore place value** **N.ME.01.07** Compose and decompose numbers to 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.	**Count, write, and order whole numbers** **N.ME.02.02** Read and write numbers to 1000 in numerals and words, and relate them to the quantities they represent. **N.ME.02.03** Compare and order numbers to 1000; use the symbols > and <. **Understand place value** **N.ME.02.05** Express numbers up to 1000 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.	**Understand and use number notation and place value** **N.ME.03.01** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects. **N.ME.03.02** Recognize and use expanded notation for numbers using place value to 10,000s place, e.g., 2,517 is 2 thousands, 5 hundreds, 1 ten, and 7 ones; 4 hundreds and 2 ones is 402; identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. **Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.16** Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator." **Understand simple decimal fractions in relation to money** **N.ME.03.21** Understand the meaning of $0.50 and $0.25 related to money, e.g., $1.00 shared by two people means $1.00 ÷ 2 = 1/2 dollar = $0.50.	**Read, interpret and compare decimal fractions** **N.ME.04.15** Read and interpret decimals up to two decimal places; relate to money and place value decomposition. **N.ME.04.17** Locate tenths and hundredths on a number line. **N.ME.04.18** Read, write, interpret, and compare decimals up to two decimal places. **N.MR.04.19** Write tenths and hundredths in decimal and fraction forms, and know the decimal equivalents for halves and fourths.
3. Develop an understanding of the properties of numbers (e.g., order) and of the properties of the special numbers 0 and 1.		**Explore place value** **N.ME.01.07** Compose and decompose numbers to 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.	**Understand place value** **N.ME.02.05** Express numbers up to 1000 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials.	**Understand and use number notation and place value** **N.ME.03.02** Recognize and use expanded notation for numbers using place value to 10,000s place, e.g., 2,517 is 2 thousands, 5 hundreds, 1 ten, and 7 ones; 4 hundreds and 2 ones is 402; identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place.	**Understand and use number notation and place value** **N.ME.04.02** Compose and decompose numbers using place value to 1,000,000's, e.g., 25,068 is 2 ten thousands, 5 thousands, 0 hundreds, 6 tens, and 8 ones. **N.ME.04.03** Understand the magnitude of numbers up to 1,000,000; recognize the place value's of numbers, and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds. **Multiply and divide whole numbers** **N.ME.04.09** Multiply two-digit numbers by 2, 3, 4, and 5, using the distributive property, e.g.,21 x 3 = (1 + 20) x 3 = (1 x 3) + (20 x 3) = 3 + 60 = 63.
4. Apply their understanding of number systems to model and solve problems.	**Compose and decompose numbers** **N.MR.00.08** Describe and make drawings to represent situations/stories involving putting together and taking apart for totals up to 10; use finger and object counting.			**Multiply and divide whole numbers** **N.MR.03.14** Solve simple division problems involving remainders, viewing remainder as the "number left over" (less than the divisor), e.g., 4 children per group; we have 25 children; there are 6 groups with 1 child left over; interpret based on problem context. **Problem solving with whole numbers** **N.MR.03.15** Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.	**Add and subtract decimal fractions** **N.MR.04.31** Use mathematical statements to represent problems that use addition and subtraction of decimals with up to two-digits; solve. **Problem solving** **N.MR.04.37** Solve applied problems using the four basic arithmetic operations, for appropriate fractions, decimals, and whole numbers.

Strand IV: Number Sense and Numeration
Standard 2: Representation and Uses of Numbers - Students recognize that numbers are used in different ways such as counting, measuring, ordering and estimating, understand and produce multiple representations of a number, and translate among equivalent representations.

Key Ideas:
1. Students recognize and understand numbers that they encounter in varied formats.
2. Numeracy requires that students recognize when numbers are equivalent even though they may be represented in different formats.
3. Numbers are used for varied purposes, and it is important to differentiate among their uses.
4. Estimation is one of the most important skills for students to develop and use on a regular basis.
5. Knowing what numbers to use and how to represent them is key to students' abilities to solve problems.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Represent whole numbers, fractions and decimals using concrete, pictorial and symbolic representations.			**Understand place value** **N.ME.02.05** Express numbers up to 1000 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials. **Work with unit fractions** **N.ME.02.18** Recognize, name, and represent commonly used unit fractions with denominators 12 or less; model $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ by folding strips. **N.ME.02.19** Recognize, name, and write commonly used fractions: $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$. **N.ME.02.20** Place 0 and halves, e.g., $\frac{1}{2}, 1\frac{1}{2}, 2\frac{1}{2}$, on the number line; relate to a ruler.	**Understand and use number notation and place value** **N.ME.03.01** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects. **N.ME.03.02** Recognize and use expanded notation for numbers using place value to 10,000s place, e.g., 2,517 is 2 thousands, 5 hundreds, 1 ten, and 7 ones; 4 hundreds and 2 ones is 402; identify the place value of a digit in a number, e.g., in 3,241, 2 is in the hundreds place. **Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.16** Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator." **N.ME.03.17** Recognize, name and use equivalent fractions with denominators 2, 4, and 8, using strips as area models. **N.ME.03.18** Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8. **Understand simple decimal fractions in relation to money** **N.ME.03.21** Understand the meaning of \$0.50 and \$0.25 related to money, e.g., \$1.00 shared by two people means \$1.00 ÷ 2 = $\frac{1}{2}$ dollar = \$0.50.	**Understand and use number notation and place value** **N.ME.04.03** Understand the magnitude of numbers up to 1,000,000; recognize the place value's of numbers, and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds. **Read, interpret and compare decimal fractions** **N.ME.04.15** Read and interpret decimals up to two decimal places; relate to money and place value decomposition. **N.ME.04.16** Know that terminating decimals represent fractions whose denominators are 10, 10 x 10, 10 x 10 x 10, etc. e.g., powers of 10. **N.ME.04.18** Read, write, interpret, and compare decimals up to two decimal places. **N.MR.04.19** Write tenths and hundredths in decimal and fraction forms, and know the decimal equivalents for halves and fourths. **Understand fractions** **N.ME.04.20** Understand fractions as parts of a set of objects. **N.MR.04.22** Locate and compare fractions on the number line, including improper fractions and mixed numbers with denominators of 12 or less. **N.MR.04.24** Know that fractions of the form $^{m}/_{n}$ where m is greater than n, are greater than 1 and are called improper fractions; locate improper fractions on the number line; express as mixed numbers. **N.MR.04.25** Write improper fractions as mixed numbers, and understand that a mixed number represents the number of "wholes" and the part of a whole remaining, e.g., 5/4 = 1 + 1/4.

2. Explore and recognize different representations for the same number and explain why they are the same.	**Compose and decompose numbers** **N.ME.00.06** Understand the numbers 1 to 30 as having one, or two, or three groups of ten and some ones. Also count by tens with objects in ten-groups, to 100. **N.MR.00.07** Compose and decompose numbers from 2 to 10, e.g., 5 = 4 + 1 = 2 + 3, with attention to the additive structure of numbers, e.g., 6 is 1 more than 5, 7 is one more than 6.	**Count, write, and order numbers** **N.ME.01.03** Order numbers to 110; compare using the phrases: same as, more than, greater than, fewer than; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21,16, 35, 8. **Explore place value** **N.ME.01.07** Compose and decompose numbers to 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones.	**Add and subtract whole numbers** **N.FL.02.06** Decompose 100 into addition pairs, e.g., 99 + 1, 98 + 2 … **Work with unit fractions** **N N.ME.02.18** Recognize, name, and represent commonly used unit fractions with denominators 12 or less; model $\frac{1}{2}, \frac{1}{3}$, and $\frac{1}{4}$ by folding strips. **N.ME.02.19** Recognize, name, and write commonly used fractions: $\frac{1}{2}, \frac{1}{3}, \frac{2}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$. **N.ME.02.22** Recognize that fractions such as $\frac{2}{2}, \frac{3}{3}$ and $\frac{4}{4}$ are equal to the whole (one). **Understand meaning of multiplication and division** **N.MR.02.13** Understand multiplication as the result of counting the total number of objects in a set of equal groups, e.g., 3 x 5 gives the number of objects in 3 groups of 5 objects, or 3 x 5 = 5 + 5 + 5 = 15.	**Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.17** Recognize, name and use equivalent fractions with denominators 2, 4, and 8, using strips as area models. **N.ME.03.19** Understand that any fraction can be written as a sum of unit fractions, e.g., $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$.	**Read, interpret and compare decimal fractions** **N.ME.04.18** Read, write, interpret, and compare decimals up to two decimal places. **Understand fractions** **N.MR.04.21** Explain why equivalent fractions are equal, using models such as fraction strips or the number line, for fractions with denominators of 12 or less, or equal to 100. **N.MR.04.22** Locate and compare fractions on the number line, including improper fractions and mixed numbers with denominators of 12 or less. **N.MR.04.23** Understand the relationships among halves, fourths and eighths and among thirds, sixths and twelfths. **N.MR.04.24** Know that fractions of the form $\frac{m}{n}$, where m is greater than n, are greater than 1 and are called improper fractions; locate improper fractions on the number line; express as mixed numbers. **N.MR.04.26** Compare and order up to three fractions with denominators 2, 4, and 8, and 3, 6, and 12, including improper fractions and mixed numbers.
3. Investigate ways numbers are used (e.g., counting, ordering, naming, locating, measuring).	**Count, write, and order numbers** **N.ME.00.01** Count whole numbers and recognize how many objects are in sets to 30. **N.ME.00.04** Read and write numerals to 30 and connect them to the quantities they represent. **N.ME.00.05** Count orally to 100 by ones. Count to 30 by 2's, 5's and10's using grouped objects as needed.	**Count, write, and order numbers** **N.ME.01.01** Count to 110 by 1's, 2's, 5's, and 10's, starting from any number in the sequence; count to 500 by 100's and 10's; use ordinals to identify position in a sequence, e.g., 1st, 2nd, 3rd. **N.ME.01.02** Read and write numbers to 110 and relate them to the quantities they represent. **N.ME.01.03** Order numbers to 110; compare using the phrases: same as, more than, greater than, fewer than; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21,16, 35, 8.	**Count, write, and order whole numbers** **N.ME.02.01** Count to 1000 by 1's, 10's, and 100's starting from any number in the sequence. **N.ME.02.02** Read and write numbers to 1000 in numerals and words, and relate them to the quantities they represent. **N.ME.02.03** Compare and order numbers to 1000; use the symbols > and <. **N.ME.02.04** Count orally by 3's and 4's starting with 0, and by 2's, 5's, and 10's starting from any number. .	**Understand and use number notation and place value** **N.ME.03.01** Read and write numbers to 10,000 in both numerals and words, and relate them to the quantities they represent, e.g., relate numeral or written word to a display of dots or objects. **Count in steps, and understand even and odd numbers** **N.ME.03.04** Count orally by 6's, 7's, 8's, and 9's starting with 0, making the connection between repeated addition and multiplication.	**Understand and use number notation and place value** **N.ME.04.01** Read and write numbers to 1,000,000; relate them to the quantities they represent; compare and order.

4. Develop strategies for estimating quantity and evaluate the reasonableness of their estimates.			**Add and subtract whole numbers** **N.FL.02.11** Estimate and calculate the sum of two numbers with three digits that do not require regrouping.	**Add and subtract whole numbers** **N.FL.03.07** Estimate the sum and difference of two numbers with three digits (sums up to 1000), and judge reasonableness of estimates.	**Estimate** **N.FL.04.34** Estimate the answers to calculations involving addition, subtraction, or multiplication. **N.FL.04.35** Know when approximation is appropriate and use it to check the reasonableness of answers; be familiar with common place-value errors in calculations. **N.FL.04.36** Make appropriate estimations and calculations fluently with whole numbers using mental math strategies.
5. Select appropriate numbers and representations in order to solve problems.			**Understand meaning of multiplication and division** **N.MR.02.13** Understand multiplication as the result of counting the total number of objects in a set of equal groups, e.g., 3 x 5 gives the number of objects in 3 groups of 5 objects, or 3 x 5 = 5 + 5 + 5 = 15. **N.MR.02.14** Represent multiplication using area and array models. **N.MR.02.16** Given a simple situation involving groups of equal size or of sharing equally, represent with objects, words, and symbols; solve.	**Problem solving with whole numbers** **N.MR.03.15** Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.	**Multiply fractions by whole numbers** **N.MR.04.30** Multiply fractions by whole numbers, using repeated addition and area or array models. **Problem solving** **N.MR.04.37** Solve applied problems using the four basic arithmetic operations, for appropriate fractions, decimals, and whole numbers.

Strand IV: Number Sense and Numeration
Standard 3: Number Relationships - Students investigate relationships such as equality, inequality, inverses, factors and multiples, and represent and compare very large and very small numbers.

Key Ideas:
1. Relationships of equality and inequality are among the most fundamental in mathematics.
2. Students learn the importance of making comparisons between numbers, especially as ratios and rates.
3. By classifying numbers according to their properties and identifying important numerical relationships, students develop a deeper understanding of numbers.
4. Numbers that are related exponentially exhibit important relationships that students will encounter in a variety of applications.
5. Students can invoke important number relationships to help them understand and solve problems.

Elementary Benchmark	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
1. Compare and order numbers using "equal," "less than" or "greater than."	**Count, write, and order numbers** **N.ME.00.02** Use one-to-one correspondence to compare and order sets of objects to 30 using such phrases as "same number", "more than", or "less than"; use counting and matching. **N.ME.00.03** Compare and order numbers to 30 using phrases such as "more than" or "less than."	**Count, write, and order numbers** **N.ME.01.03** Order numbers to 110; compare using the phrases: same as, more than, greater than, fewer than; use = symbol. Arrange small sets of numbers in increasing or decreasing order, e.g., write the following from smallest to largest: 21,16, 35, 8. **N.ME.01.04** Identify one more than, one less than, 10 more than, and 10 less than for any number up to 100. **N.ME.01.05** Understand that a number to the right of another number on the number line is bigger and that a number to the left is smaller.	**Count, write, and order whole numbers** **N.ME.02.03** Compare and order numbers to 1000; use the symbols > and <. **Work with unit fractions** **N.ME.02.20** Place 0 and halves, e.g., $\frac{1}{2}, 1\frac{1}{2}, 2\frac{1}{2},$ on the number line; relate to a ruler.	**Understand and use number notation and place value** **N.ME.03.03** Compare and order numbers up to 10,000. **Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.17** Recognize, name and use equivalent fractions with denominators 2, 4, and 8, using strips as area models. **N.ME.03.18** Place fractions with denominators of 2, 4, and 8 on the number line; relate the number line to a ruler; compare and order up to three fractions with denominators 2, 4, and 8.	**Understand and use number notation and place value** **N.ME.04.03** Understand the magnitude of numbers up to 1,000,000; recognize the place value's of numbers, and the relationship of each place value to the place to its right, e.g., 1,000 is 10 hundreds. **Read, interpret and compare decimal fractions** **N.ME.04.17** Locate tenths and hundredths on a number line. **N.ME.04.18** Read, write, interpret, and compare decimals up to two decimal places. **Understand fractions** **N.MR.04.23** Understand the relationships among halves, fourths and eighths and among thirds, sixths and twelfths. **N.MR.04.26** Compare and order up to three fractions with denominators 2, 4, and 8, and 3, 6, and 12, including improper fractions and mixed numbers.

2. Use part-whole relationships to explore numbers, develop number concepts and understand computation.	**Add and subtract whole numbers** **N.ME.01.08** List number facts (partners inside of numbers) for 2 through 10; e.g., 8 = 7 + 1 = 6 + 2 = 5 + 3 = 4 + 4; 10 = 8 + 2 = 2 + 8.	**Explore place value** **N.ME.01.07** Compose and decompose numbers to 30, including using bundles of tens and units, e.g., recognize 24 as 2 tens and 4 ones, 10 and 10 and 4, 20 and 4, and 24 ones. **Add and subtract whole numbers** **N.ME.01.08** List number facts (partners inside of numbers) for 2 through 10; e.g., 8 = 7 + 1 = 6 + 2 = 5 + 3 = 4 + 4; 10 = 8 + 2 = 2 + 8.	**Understand place value** **N.ME.02.05** Express numbers up to 1000 using place value, e.g., 137 is 1 hundred, 3 tens, and 7 ones; use concrete materials. **Understand meaning of multiplication and division** **N.MR.02.13** Understand multiplication as the result of counting the total number of objects in a set of equal groups, e.g., 3 x 5 gives the number of objects in 3 groups of 5 objects, or 3 x 5 = 5 + 5 + 5 = 15. **Work with unit fractions** **N.ME.02.22** Recognize that fractions such as $\frac{2}{2}, \frac{3}{3}$ and $\frac{4}{4}$ are equal to the whole (one).	**Understand simple fractions, relation to the whole, and addition and subtraction of fractions** **N.ME.03.16** Understand that fractions may represent a portion of a whole unit that has been partitioned into parts of equal area or length; use the terms "numerator" and "denominator." **N.ME.03.17** Recognize, name and use equivalent fractions with denominators 2, 4, and 8, using strips as area models. **N.ME.03.19** Understand that any fraction can be written as a sum of unit fractions, e.g. $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	**Use factors and multiples** **N.ME.04.04** Find all factors of a whole number up to 50, and list factor pairs. **Understand fractions** **N.ME.04.20** Understand fractions as parts of a set of objects. **N.MR.04.21** Explain why equivalent fractions are equal, using models such as fraction strips or the number line, for fractions with denominators of 12 or less, or equal to 100. **N.MR.04.22** Locate and compare fractions on the number line, including improper fractions and mixed numbers with denominators of 12 or less.
3. Classify numbers as even or odd and explore concepts of factors and multiples.				**Count in steps, and understand even and odd numbers** **N.ME.03.05** Know that even numbers end in 0, 2, 4, 6, or 8; name a whole number quantity that can be shared in two equal groups or grouped into pairs with no remainders; recognize even numbers as multiples of 2. Know that odd numbers end in 1, 3, 5, 7, or 9, and work with patterns involving even and odd numbers.	**Use factors and multiples** **N.ME.04.04** Find all factors of a whole number up to 50, and list factor pairs. **N.ME.04.05** List the first ten multiples of a given one-digit whole number; determine if a whole number is a multiple of a given one-digit whole number, and if a one-digit number is a factor of a given whole number. **N.MR.04.06** Know that some numbers, including 2, 3, 5, 7, and 11 have exactly two factors (1 and the number itself) and are called prime numbers. **N.MR.04.07** Solve problems about factors and multiples, e.g., since 100 = 4 x 25, and 200 = 2 x 100, then 200 = 2 x 4 x 25 = 8 x 25.
4. (Does not apply at the elementary grades.)					
5. Apply their understanding of number relationships in solving problems.				**Problem solving with whole numbers** **N.MR.03.15** Given problems that use any one of the four operations with appropriate numbers, represent with objects, words, (including "product" and "quotient"), and mathematical statements; solve.	**Problem solving** **N.MR.04.37** Solve applied problems using the four basic arithmetic operations, for appropriate fractions, decimals, and whole numbers.